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EXAMINER	
PHU, SANH D	
ART UNIT	**PAPER NUMBER**
2618	

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/698,132	Applicant(s) YIP, CHIFAI	
	Examiner Sanh D. Phu	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/15/04*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 7/15/04. The information disclosure statement is considered by the examiner.

Claim Objections

2. Claims 3 and 15 are objected to because of the following informalities: the limitations "the TX signal" and "the RX signal" are lack of antecedent basis. Appropriate correction is required.

3. Claim 10 is objected to because of the following informalities: the limitation "the reverse power" is lack of antecedent basis. Appropriate correction is required.

4. Claims 11 and 18 are objected to because of the following informalities: the limitations "the isolation path" and "the TX path" are lack of antecedent basis. Appropriate correction is required.

5. Claim 12 is objected to because of the following informalities: the limitations "the matched load" and "the terminated node" are lack of antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-3, 5, 7-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (5,483,679) in view of Wolff et al, "Microwave Engineering and System Applications", pages 214-222, published by John Wiley & Son, Inc. in 1988.

-Regarding to claim 1, Sasaki discloses a transceiver (see figure 1) comprising:

a TX path mixer (19) that up converts a signal (QM) to be transmitted (see col. 3, lines 36-45);

a RX path mixer (29) that down converts a received signal (outputted from device (27)) (see col. 3, line 64 to col. 4 line 2); and

a local oscillator (20) having an output (PO) providing a mixing frequency for each of said TX and RX mixers (see col. 4, lines 3-7).

Sasaki does not disclose a directional coupler comprising an input node coupled to said output of said local oscillator and further comprising a first output node coupled to said TX path mixer and a second output node coupled to said RX path mixer, as claimed.

However, in Sasaki, the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers (see figure 1).

Wolff et al teaches using a directional coupler for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of

an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

-Regarding to claim 2, Sasaki, in view of Wolff et al teaches that the directional coupler can be configured as an unequal power divider (see Wolff et al, figure 8.12, and page 218, section 8.4.2.2, lines 1-6).

-Regarding to claim 3, in Sasaki invention in view of Wolff et al, Wolff et al teaches that the directional coupler can be configured with a symmetrical structure (e.g., a directional coupler shown in figure 8.12a) and matching all of the four ports to the same impedance (Zo), in such a way that if port (1) is the input, the coupled power appears at the two ports (4) and (3) and almost no power appears at port (2) (see page 218, section 8.4.2.2, lines 1-6). Therefore, it can be derived that since said directional coupler has such the symmetrical structure, if an input signal is inputted at one of the two ports (3) and (4), the coupled power of the input signal would appear at ports (1) and (2) and almost no coupled power appear at the other port of the two ports (3) and (4).

With the above rationale, Sasaki invention in view of Wolff et al teaches that the directional coupler can be configured having such the symmetrical structure to prevent a TX signal from being reflected back into port (3) of the directional coupler to port (4) of the directional coupler on a RX signal at port

(4) (since in such a case, the reflected signal would appear at ports (1) and (2) of the directional coupler, and almost no coupled power of the reflected signal appear at port (4) of the directional coupler).

-Regarding to claim 5, with the same reason being explained for claim 3, Sasaki invention in view of Wolff et al teaches that the directional coupler can be configured having such the symmetrical structure to prevent a TX signal from being reflected back into port (3) of the directional coupler to port (4) of the directional coupler on a RX signal at port (4), or namely, the directional coupler provides an isolation path (via port (3) to port (4) of the directional coupler) from the TX path mixer to the RX path mixer.

-Regarding to claim 7, with the same reason being explained for claims 3 and 5, Sasaki in view of Wolff et al teaches that the directional coupler can prevent single tone desensitization problems since the directional coupler can be configured having such the symmetrical structure to prevent a TX signal from being reflected back into port (3) of the directional coupler to port (4) of the directional coupler on a RX signal at port (4), or namely, the directional coupler provides an isolation path (via port (3) to port (4) of the directional

coupler) from the TX path mixer to the RX path mixer so that such the isolation would prevent a transmit signal (QM) (see Sasaki, figure 1) from being reflected back through the directional coupler to a receive signal outputted from device (26, 27, 29) (see Sasaki, figure 1), which would create the single tone desensitization problems.

-Regarding to claim 8, as similarly applied to claim 2, Sasaki, in view of Wolff et al, teaches that the directional coupler can be configured as an unequal power divider (see Wolff et al, figure 8.12, and page 218, section 8.4.2.2, lines 1-6), or namely, the directional coupler can be configured to provide higher output power for the RX path mixer than for the TX path mixer.

-Regarding to claim 9, Sasaki, in view of Wolff et al, teaches that the directional coupler can be configure to have the directional coupler loss of 3-9 dB (see Wolff et al, page 18, section 8.4.2.2, lines 1-2), namely less than 10 dB.

-Regarding to claim 10, Sasaki in view of Wolff et al does not disclose whether a terminated node of the directional coupler provides a 50 ohm load to absorb a reverse power, as claimed.

However, Sasaki, in view of Wolff et al, teaches that the directional coupler can be configured with a symmetrical structure (e.g., a directional coupler shown in figure 8.12a) and matching all of the four ports to the same impedance (Zo) (typically 50 ohms) (see page 218, section 8.4.2.2, lines 1-6).

Since in Sasaki in view of Wolff et al, port (2) of the directional, as an unused port, is necessary to be terminated by a 50 ohm load in order to match to the same impedance of 50 ohms with the other three ports (1), (3) and (4); therefore, it would have been obvious for a person skilled in the art, within his skills, to implement in Sasaki in view of Wolff et al with a 50 ohm load in such a way that port (2) of the directional, as an unused port, would be terminated by the 50 ohm load in order to match to the same impedance of 50 ohms with the other three ports (1), (3) and (4), as being needed.

With such the implementation, powers (if any, which includes reverse powers) appear at port (2) of the directional coupler would be absorbed by the 50 ohm load as being a match load.

Therefore, with such the implementation, Sasaki in view of Wolff et al teaches the terminated node (2) of the directional coupler provides the 50 ohm load to absorb reverse powers, as claimed.

-Regarding to claim 11, with the same explanation to claims 3 and 5 , Sasaki in view of Wolff et al teaches that the isolation path (via port (3) to port (4) of the directional coupler) would provide high reverse isolation from a TX path at port (3) of the directional coupler to port (4) of the directional coupler.

-Regarding to claim 12, with the same explanation in claim 10, the directional coupler can be configured in such a way that powers (if any, which includes a reflected signal from the TX path mixer) appear at port (2) of the directional coupler would be absorbed by a 50 ohm load being terminated at port (2) as a match load.

Therefore, with such the configuration, Sasaki in view of Wolff et al teaches that within the directional coupler, the reflected signal from the TX path mixer is absorbed by the matched load of the terminated node (2) of the directional coupler, as claimed.

-Regarding to claim 13, similarly applied to claim 1, Sasaki a method (see figure 1) generating transceiver signals, comprising:

procedure (19) of up converting a signal (QM) to be transmitted via a TX path mixer (19) (see col. 3, lines 36-45);

procedure (29) of down converting a received signal (outputted from device (26, 27)) via a RX path mixer (29) (see col. 3, line 64 to col. 4 line 2) , and

procedure (20) of providing a local oscillator (20) having an output (PO) providing a mixing frequency for each of said TX and RX mixers (see col. 4, lines 3-7).

Sasaki does not discloses procedure of coupling the output of said local oscillator to an input node of a directional coupler, and coupling said TX path mixer to a first output node of said directional coupler and coupling said RX path mixer to a second output node of said directional coupler, as claimed.

However, in Sasaki, the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers (see figure 1).

Wolff et al teaches using a directional coupler for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting

the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

Therefore, Sasaki in view of Wolff et al teaches procedure of coupling the output (PO) of said local oscillator to an input node (port 1) of a directional coupler, and coupling said TX path mixer to a first output node (port 3) of said directional coupler and coupling said RX path mixer to a second output node (port 4) of said directional coupler, as claimed.

-Claim 14 is rejected with similar reasons set forth for claim 2.

-Claim 15 is rejected with similar reasons set forth for claim 3.

-Claim 16 is rejected with similar reasons set forth for claim 8.

-Claim 17 is rejected with similar reasons set forth for claim 5.

-Claim 18 is rejected with similar reasons set forth for claim 11.

8. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Wolff et al, and further in view of Vagher (6,362,685).

-Regarding to claim 4, Sasaki in view of Wolff et al does not teach whether the directional coupler operating frequency range is wider, or namely, greater than the output frequency of the local oscillator, as claimed.

However, in Sasaki in view of Wolff et al, the directional coupler operating frequency range is necessary to be the same or wider than the output frequency of the local oscillator for including the output frequency of the local oscillator the so that the directional coupler can operate at the output frequency of the local oscillator.

Vagher teaches that a directional coupler (200) can be configured to have a desired operating frequency wide range (e.g., 969 MHz-1306 GHz) (see figures 2 and 3, and col. 5, lines 17-42).

It would have been obvious for a person skilled in the art to implement the directional coupler, in Sasaki in view of Wolff et al, as the one as taught by Vagher, in such a way that the directional coupler operating frequency range of the directional coupler would be wider than the output frequency of the local oscillator, as desired, for including the output frequency of the local oscillator the so that the directional coupler can operate at the output frequency of the local oscillator, as being needed.

-Regarding to claim 6, Sasaki in view of Wolff et al does not teach whether the directional coupler covers dual bands for dual band single output local oscillator configurations, as claimed.

However, in Sasaki in view of Wolff et al, the directional coupler operating frequency range is necessary to be the same or wider than the output frequency of the local oscillator for including the output frequency of the local oscillator the so that the directional coupler can operate at the output frequency of the local oscillator.

Vagher teaches that a directional coupler (200) can be configured to have a desired operating frequency wide range (e.g., 969 MHz-1306 GHz) (see figures 2 and 3, and col. 5, lines 17-42).

It would have been obvious for a person skilled in the art to implement the directional coupler, in Sasaki in view of Wolff et al, as the one as taught by Vagher, in such a way that the directional coupler operating frequency range of the directional coupler would be wider than the output frequency of the local oscillator, as desired, for including the output frequency of the local oscillator

the so that the directional coupler can operate at the output frequency of the local oscillator, as being needed.

With such the implementation, since the directional coupler can be configured so that the directional coupler operating frequency range of the directional coupler is wide as desired, the directional coupler operating frequency range of the directional coupler is capable of including, or namely covering, two sub-bands which might happen to be dual bands for dual band single output local oscillator configurations, as claimed.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanh D. Phu whose telephone number is (571)272-7857. The examiner can normally be reached on M-Th from 7:00-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571) 272-

4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sanh D. Phu
Examiner
Division 2618

4/14/06

SP

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PATENT EXAMINER